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| 09/909,487      | 07/20/2001  | Willard K. McClintock | 26608-1             | 2572             |

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EXAMINER

MCNELIS, KATHLEEN A

ART UNIT PAPER NUMBER

1742

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/909,487

**Applicant(s)**

MCCLINTOCK ET AL.

**Examiner**

Kathleen A. McNelis

**Art Unit**

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-7,26 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,26 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **Acknowledgement of RCE**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.115, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/09/2006 has been entered.

### **Claims Status**

Claims 1, 2, 4-7, 26 and 30 remain for examination wherein claims 1, 7, 26 and 30 are amended.

### **Status of Previous Rejections**

The previous rejection of claims 1, 26 and 30 under 35 U.S.C. 112 1<sup>st</sup> paragraph is withdrawn in view of applicant's amendments to the claims.

The previous rejections of claims 1, 2, 4-7, 26 and 30 under 35 U.S.C. 103(a) as being unpatentable over:

- Fudala (U.S. Pat. No. 5,493,580);
- Fudala in view of Lankford Jr. et al. (1985);
- Fudala in view of Ford Jr. et al. (U.S. Pat. No. 5,738,694); and
- Fudala in view of Steger et al. (1999)

are withdrawn in view of amendments to the claims.

### **DETAILED ACTION**

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains,

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or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 4-7 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 (line 3) and 30 (line 3) recite "...from about 5 to about 30% of a..."

Claim 2 (line 2) recites "...about 90% coal and about 10% dolomitic stone"

Claim 4 (line 2) recites "...less than about 2% water"

The claims do not recite if these compositions are weight or volume percentages. In order to further prosecution examiner has assumed weight percentage.

Claim 26 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 10-11, claim 26 recites, "...wherein less than about 1% by weight of the total iron in the heat being recovered is iron." Examiner believes that this must be a typographical error (i.e. something missing from sentence) since by definition all of the iron is iron. This limitation

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appears to have been entered by amendment file date 2/21/2003. Examiner does not find support for this limitation in the original disclosure; therefore this is new matter.

For purposes of furthering prosecution, examiner has assumed that this limitation was intended to recite that less than about 1% of the total iron in the heat is provided by recycled post combustion material.

### DETAILED ACTION

#### *Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4, 7, 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford Jr. et al. (U.S. Pat. No. 5,738,694) in view of Fudala (U.S. Pat. No. 5,493,580).

With respect to claims 1, 4, 7, 26 and 30, Ford Jr. et al. discloses forming briquettes, pellets and/or other solid objects from iron containing, iron bearing or iron-rich material with a carbon source such as coal fines to provide a source of iron in the steel and iron-making processes and carbon for reduction (col. 2 lines 50-54), wherein the coal fines are a slag foaming material. Ford Jr. discloses that a suitable iron-containing material is electric arc furnace (EAF) dust deposited from gas streams from an electric arc furnace (col. 3 lines 53-56), which examiner contends would include material collected from a drop out box. Ford Jr. teaches heating the briquettes to between 250 and 400 °F, which reduces the moisture content to less than about 2 wt%(col. 5 lines 24-35). In example II, the formed briquette contains 45.5 % iron and less than 5% by weight other metals and metal oxides (Example II, Table A, cols 6-7).

With respect to claims 1 and 30, Ford Jr. et al. does not recite that from about 5% to about 30% of the material is from a post combustion material recycled from and EAF, or that the material is used in a heat of steel in an EAF.

Fudala discloses a method for recycling electric arc furnace dust and coal by injected into an electric arc furnace at the interface between the slag and molten metal bath (col. 2, lines 4-8). Fudala discloses that the mixture contains up to about 70% in volume (80% by weight) dust (col. 3 lines 1-4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include up to 70% dust as taught by Fudala in the mixture of Ford Jr., since Fudala teaches that this mixture is suitable for recycling in a steel making process which is an objective of Ford Jr. et al.

The range of up to about 70% in volume (80% by weight) dust overlaps the claimed range of about 5% to about 30 %. In the absence of unexpected results, it would have been obvious to one of ordinary skill in the art to select the narrower range of about 5% to about 30 %, since Fudala discloses equal utility over the broader range of up to about 70% in volume (80% by weight).

With respect to claims 26 and 30, Fudala limits the amount of filter dust injected back into the furnace for recovery to at most 24 Kg/ton (i.e. about 2.6 wt%) of steel produced (col. 4, lines 1-4), which is only a portion of the iron in the heat as in instant claim 30, and overlaps the range of less than about 1% by weight in claim 26, therefore a prima facie case of obviousness exists (see M.P.E.P § 2144.05).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ford Jr. et al. (U.S. Pat. No. 5,738,694) in view of Fudala (U.S. Pat. No. 5,493,580) as applied to claim 1 and further in view of Lankford Jr. et al. (The Making, Shaping and Treating of Steel, 1985).

Ford Jr. et al. in view of Fudala is applied as discussed above regarding claim 1.

Lankford Jr. et al. teaches that the melt impurities determine the type of flux that will be used (p. 325). For removal of acidic impurities, such as sulfur, a basic slag consisting of either dolomite or limestone may be used. The choice of flux material and quantity are result effective variables, determined by the melt impurities (pp. 325 –326). Lankford teaches that the addition of dolomite greatly decreases the tendency for slag to attack the MgO in the furnace lining (p. 326). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use dolomite or limestone as a flux as taught by Lankford Jr. et al. in the process of Ford Jr et al. in view of Fudala to remove acidic impurities and protect refractory as taught by Lankford Jr. et al. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the addition rate of dolomite based on melt impurities to be removed.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford Jr. et al. (U.S. Pat. No. 5,738,694) in view of Fudala (U.S. Pat. No. 5,493,580) as applied to claim 1 and further in view of Hoffman et al. (U.S. Pat. No. 5,186,742).

Ford Jr. et al. in view of Fudala is applied as discussed above regarding claim 1.

Fudala teaches that it is desirable to inject the material of a size range of from 0 to 5 mm into the furnace to increase the foaming of slag (col. 2 lines 16-57), but does not anticipate an agglomerated mixture as in Ford Jr. et al.

Hoffman et al. discloses a method for agglomerating EAF dusts into compact pellets which can be pneumatically conveyed (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to produce compact pellets as taught by Hoffman et al. for injection into the process of Ford Jr. et al. in view of Fudala, since Fudala teaches that it is desirable to inject the material into the furnace to increase slag foaming. Further, it would have

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been obvious to one of ordinary skill in the art to produce the pellets in a size range of 0 to 5 mm (i.e. less than 3/16 inch), as desired in Fudala. The range of less than 3/16 of an inch is within the range of less than 5/16 of an inch in instant claim 6.

***Response to Arguments***

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571 272 3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAM

12/04/2006



  
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